

### Claims

1. A conditional access system wherein digitised multimedia data are transmitted in a continuous transport stream of successive data packets, characterised in that a selectively encrypted transport stream is formed from a base transport stream by detecting particular data packets within the base transport stream, removing and encrypting the particular data packets with an event encryption key, and inserting the encrypted data packets into the remaining base transport stream at insertion positions ahead in time with respect to the original positions of the particular data packets in the base transport stream.

2. A conditional access system wherein digitised multimedia data are transmitted in a continuous transport stream of successive data packets, characterised in that a selectively encrypted transport stream is formed from a base transport stream by detecting particular data packets within the base transport stream, removing and encrypting the particular data packets with an event encryption key, and inserting the encrypted data packets into the remaining base transport stream at insertion positions corresponding to the original positions of the particular data packets in the base transport stream.

3. The system of claim 1 or claim 2, wherein an event decryption key is provided to an authorised receiver provided with the conditional access system, the selectively encrypted transport stream is transmitted to the receiver, the conditional access system detects encrypted data packets, removes the encrypted data packets from the received transport stream, decrypts the encrypted data packets with the event decryption key, and inserts the decrypted data packets into the remaining received transport stream at positions corresponding to the respective original positions of the particular data packets within the base transport stream.

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4. The system of claim 3, wherein the event decryption key is provided on a one-event smart card.

5. The system of claim 3, wherein the event decryption key is provided on a one-limited-period smart card.

5      6. The system of claim 3, wherein the event decryption key in a DVB environment is transmitted in specific EMMs protected by a user encryption key, the corresponding user decryption key being provided in the CAS, on a user smart card or on a user SIM

10      7. The system of claims 2 and 3, wherein the conditional access system has a buffer memory to store clear data packets while an encrypted data packet is decrypted.

8. The system of claim 1 or claim 3, wherein said encrypted data packets are inserted at positions a predetermined number of data packets ahead of respective original positions.

15      9. The system of claim any of claims 3 to 8, wherein said conditional access system includes a chip card with decryption circuitry thereon.

10. The system of claim 9, wherein the chip card is a SIM card.

11. The system of any of the preceding claims, wherein the decryption key is transmitted to a receiver with the selectively encrypted data stream.

20      12. The system of claim 11, wherein the event decryption key is frequently changed.

13. The system of any of claims 1 to 11, wherein the event decryption key is a fixed key distributed on a pay-per-event basis.

25      14. The system of claim 13, wherein the event decryption key is transmitted in a GSM network prior to an event and loaded into a SIM or smart card inserted in a SIM or smart card reader of a mobile phone.

15. The system of any of the preceding claims, wherein the event decryption key is provided encrypted with a user encryption key and a corresponding user decryption key is also provided to an authorized user.

5 16. The system of any of the preceding claims, comprising a head-end encoder for producing the selectively encrypted data stream, the head-end encoder including a Common Interface CI that in turn has a smart card SC interface for a smart card that has encryption circuitry thereon.

10 17. The system of any of claims 1 to 15, comprising a head-end encoder for producing the selectively encrypted data stream, the head-end encoder including a Common Interface CI for a PC card module that has encryption circuitry thereon.

18. The system of any of claims 1 to 15, comprising a head-end encoder for producing the selectively encrypted data stream, the head-end encoder including a Personal Computer PC with an interface for a chip card containing an event encryption key or a user encryption key, the encryption being processed in the PC.

15 19. The system of any of claims 1 to 15, comprising a head-end encoder for producing the selectively encrypted data stream, the head-end encoder including an encoder CI module with a CI&TS (Common Interface and Transport Stream) interface to a professional Set-Top-Box STB.

20 20. The system of any of claims 1 to 19 wherein the base data stream is a clear data stream.

21. The system of any of claims 1 to 19 wherein the base data stream is a DVB-scrambled data stream.

22. The system of any of claims 1 to 19 wherein all data packets other than the selectively encrypted data packets are DVB-scrambled.

25 23. The system of claim 19, wherein the encoder CI module further comprises a high speed interface to a PC, a base transport stream being sent to the PC via the

high speed interface to be selectively encrypted by the PC or by a PC peripheral, said PC peripheral being one of the following

- a smart card reader SCR for a smart card SC having encryption circuitry thereon;
- 5        - an encryption PCMCIA module having encryption circuitry and forming a SCR for a head-end smart card.

24. The system of any of the preceding claims, wherein said particular data packets are of a nature such that their contents are propagated to successive data packets.

- 10        25. The system of any of claims 1 to 24, wherein said particular data packets are data packets containing sign bits of DCT coefficients in an MPEG stream.

26. The system of any of claims 1 to 24, wherein every  $n^{\text{th}}$  data packet of the transport stream is encrypted,  $n$  being a fixed number.

- 15        27. The system of any of claims 1 to 24, wherein every  $n^{\text{th}}$  data packet of the transport stream is encrypted,  $n$  being a variable number.

28. The system of claim 27, wherein the variable number  $n$  is randomly variable.

29. The system of claim 27, wherein the variable number  $n$  is variable as a function of data packet contents.

- 20        30. The system of any of claims 3 to 29, wherein the conditional access system is embedded in a user Set-Top-Box (STB).

31. The system of any of claims 3 to 29, wherein said conditional access system includes a PC card with a Common Interface CI for connection to a user Set-Top-Box (STB).

32. The system of claim 30 or claim 31, wherein said user Set-Top-Box (STB) is capable of detecting a current encryption level of the transport stream and to direct the transport stream, in accordance with the detected encryption level, to decryption circuitry associated with that encryption level.

5        33. The system of claim 30 or claim 31, wherein the user Set-Top-Box (STB) is capable of detecting at least some of the following encryption levels of the transport stream :

- None
- DVB only
- 10        - DVB and selective encryption
- Selective encryption only;

and the Set-Top-Box (STB) is capable of directing the transport stream to at least one of the following decryption means:

- None
- 15        - An embedded conditional access system in the Set-Top-Box (STB) able to cope with DVB only,
- An embedded conditional access system in the Set-Top-Box (STB) able to cope with selective encryption only,
- An embedded conditional access system in the Set-Top-Box (STB) able to cope with DVB and with selective encryption,
- 20        - A conditional access module in the 1<sup>st</sup> Common Interface (CI) slot of the Set-Top-Box (STB) able to cope with DVB only,
- A conditional access module in the 1<sup>st</sup> Common Interface (CI) slot of the Set-Top-Box (STB) able to cope with selective encryption only,
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- A conditional access module in the 1<sup>st</sup> Common Interface (CI) slot of the Set-Top-Box (STB) able to cope with DVB and with selective encryption,
- 5       - A conditional access module in the 2<sup>nd</sup> Common Interface (CI) slot of the Set-Top-Box (STB) able to cope with DVB only,
- A conditional access module in the 2<sup>nd</sup> Common Interface (CI) slot of the Set-Top-Box (STB) able to cope with selective encryption only,
- 10       - A conditional access module in the 2<sup>nd</sup> Common Interface (CI) slot of the Set-Top-Box (STB) able to cope with DVB and with selective encryption,
- A Smart Card (SC) in a Smart Card Reader (SCR).

34. A method of producing a partially scrambled or corrupted transport stream from a clear transport stream containing digitised multimedia data in successive  
15 data packets, characterised in that a selectively encrypted transport stream is formed from a clear transport stream by detecting particular data packets within the clear transport stream, removing and encrypting the particular data packets with an event encryption key, and inserting the encrypted data packets into the remaining clear transport stream at insertion positions ahead in time with respect  
20 to the original positions of the particular data packets in the clear transport stream.

35. A method of producing a partially scrambled or corrupted transport stream from a clear transport stream containing digitised multimedia data in successive  
data packets, characterised in that a selectively encrypted transport stream is formed from a clear transport stream by detecting particular data packets within  
25 the clear transport stream, removing and encrypting the particular data packets with an event encryption key, and inserting the encrypted data packets into the remaining clear transport stream at insertion positions corresponding to the original positions of the particular data packets in the clear transport stream.

36. A method of producing a scrambled transport stream from a clear transport stream containing digitised multimedia data in successive data packets, characterised in that

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- selected data packets are determined within the clear transport stream;

- the selected data packets are processed to obtain control words CW therefrom;

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- data packets following each selected data packet are DVB scrambled using control words CW obtained from the preceding selected data packet; and

- the selected data packets are encrypted with an event encryption key.

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37. The method of claim 36, wherein the encrypted selected data packets are inserted in the scrambled transport stream at positions ahead in time with respect to the original positions of the selected data packets in the clear transport stream.

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